Välkommen!

Applied Time Series Analysis for Ecologists

Instructors

Elizabeth “Eli” Holmes, PhD

Mark Scheuerell, PhD

Stockholm, Sweden

24-28 March 2014

With sincere thanks to

Dr. Jennifer Griffiths & Dr. Monika Winder

Department of Ecology, Environment and Plant Sciences

A little bit about us

- We are quantitative ecologists at a federal research lab

  Northwest Fisheries Science Center

  National Marine Fisheries Service

  National Oceanic & Atmospheric Administration

  Seattle, WA USA

- We are also affiliate faculty members

  School of Aquatic and Fishery Sciences

  University of Washington

- Our research supports the conservation and management of living aquatic resources

- We develop statistical methods for the analysis of multivariate time series data
    - Maximum likelihood and Bayesian
    - Population monitoring data, Mark resight data, Survival and fecundity data

- We serve on federal scientific teams charged with analyses relating to status and risk assessment and management decisions
  - Endangered and threatened species
  - Pacific NW salmon
  - Puget Sound herring
  - Puget Sound rockfish
  - Southern Resident killer whales
  - Steller sea lions
  - Plus many other marine mammals

We also like
to have fun!

Workshop Goals

- Understand what a multivariate auto-regressive state-space (MARSS) model is and basic theory
- Learn the typical ecological questions that can be asked with MARSS models.
- Learn how to frame questions mathematically as a MARSS model

- Be able to perform analyses similar to those in the case studies using the MARSS R package
  - Analysis of spatial structure and correlation
  - Combine diverse and multi-site data
  - Estimation of covariate effects
  - Dynamic factor analysis
  - Estimates species interaction strengths
  - Dynamic linear modeling

More workshops, code and publications available online

http://faculty.washington.edu/eeholmes

http://faculty.washington.edu/scheuerl/

Social media & science communication

#ATSAE

@eeholm

@mark_scheuerell